US ENVIRONMENTAL PROTECTION AGENCY

Global Fiducials Library – Supplemental Site Information

As a supplement to the Initial Site Proposal, this form collects detailed information about the EPA Fiducials site. This form requires specific details about the ecosystem, size and location of the site, resolution and frequency of images, and the changes and environmental processes to be studied at the site. To assist in accurate image collection, maps of the site need to be submitted (details included).

Logistical Information

Point of Contact: Richard Parkin _____ EPA Office/Location: Region 10, Seattle, WA ___

Site Name: Columbia River at John Day Dam_____

Location: Country: USA _____ If U.S., state(s): Washington State _____

Primary Environmental Process(es) to examine at site: Heat Transfer across the air water interface as influenced by dams. _____

_____

Site Biomes & Characteristics (Mark all that apply)

Terrestrial Biome

Temperate Forest	Grassland	Savanna	
Boreal Forest	Shrubland	Desert	Wetland
Tropical Forest	Tundra	Mountain	Urban

Others _____

Aquatic Biome

Ocean	Estuary	Shoreline/Coastal
Lake/Pond	**River/Stream**	Swamp/Marsh/Bog
Coral Reef	Others _____	

Characteristics

Climate:	Wet	Moist	**Dry**	Other _____
Eco-Zone:	Tropical	**Temperate**	Polar	Other _____
Geography:	Mountain	**Foothills**	Sub-alpine	Alpine
	Plains	Piedmont	Coastal Zone	Floodplain
	Plateau	Others _____		

Ecotones of Interest at Site

Are you interested in specific ecotones (i.e., ecosystem transition zones) at this site: Yes **No**

If yes, please describe the specific ecotones of interest as well as the environmental processes to monitor via the ecotones. _____

_____

_____

_____

Research History at Site (not limited to your or EPA's research)

If applicable, describe the types and duration of research conducted at the site.

Past (types and duration): Modeling the physical processes of heat transfer at the air/water interface as affected by dams on the river; modeling the physical processes of total dissolved gas transfer as affected by dams; research on the effects of changes in ecosystem processes on pacific salmon populations _____

_____

_____

Currently ongoing (types and duration): More of the same _____

_____

_____

Planned or Expected (types and duration): More sophisticated modeling of the physical processes with and intent to identify operational measures that could mitigate the effects of dams on water temperature and total dissolved gas. _____

_____

_____

Specific Site Details – Size, Maps and Location

Generally, a site should have maximum dimensions of 10 km x 10 km. A site is not required to be this size – smaller and larger areas are acceptable. There are trade-offs between coverage area and spatial resolution. Larger areas pose some difficulties since the area will need to be broken into several sites or images.

Please attach or send at least two maps of the site – one detailed and one broad. The maps are needed to target and validate collection of the proper location.

- Detailed map: a 1:24000-1:50000 scale is needed (USGS 7.5 min. Quad maps preferred)
- Broad map: a smaller scale map (1:100K-1:250K) of the area for spatial reference

Photocopies of maps are acceptable. The site location and boundaries must be annotated on each map.
USGS Quad maps are available in some libraries or on-line at: mapping.usgs.gov/partners/viewonline.html

Map or USGS Quad Name(s): _____

1. Center Point of Site – For Both Circular and Non-Circular Sites

Coordinates of Center Point:

Latitude: 45°43'5" _____ **N** S Deg.:Min.:Sec. or Decimal

Longitude: 120°41'34" _____ **W** E Deg.:Min.:Sec. or Decimal

Elevation of Center Point (meters): 80.4 _____ meters

2. Select EITHER a Circular or Non-Circular Site.

- **CIRCULAR Site**

Diameter of Site (kilometers): _____ km

- **NON - CIRCULAR Site**

North East Corner – Coordinates

Latitude: 45°43'51" _____ **N** S Deg.:Min.:Sec. or Decimal

Longitude: 120°41'26" _____ **W** E Deg.:Min.:Sec. or Decimal

South East Corner – Coordinates

Latitude: 45°42'28" _____ **N** S Deg.:Min.:Sec. or Decimal

Longitude: 120°40'20" _____ **W** E Deg.:Min.:Sec. or Decimal

South West Corner – Coordinates

Latitude: 45°42'10" _____ **N** S Deg.:Min.:Sec. or Decimal

Longitude: 120°43'01" _____ **W** E Deg.:Min.:Sec. or Decimal

North West Corner – Coordinates

Latitude: 45°42'57" _____ **N** S Deg.:Min.:Sec. or Decimal

Longitude: 120°43'00" _____ **W** E Deg.:Min.:Sec. or Decimal

3. Describe unique features in the area. The features will assist with identifying the site and boundaries:

The Columbia River occupies almost the entire area and John Day Dam crosses the river almost in the center of the area. _____

_____

_____

Specific Site Details – Frequency of Image Collection

The Fiducials program anticipates that a site will be imaged more than once a year. Images are collected as the system has capacity. To assist with tasking, we need to articulate the frequency with which a site requires images as well as specific times in the year that images are desired.

How often do you require images of this site each year in order to monitor conditions, observe changes, and study the environmental processes over time?

Number of images per year: An image from each over pass of the site (1 per day or more frequently)

What particular times do you prefer the images be acquired?

Season(s) (specify): _____

Month(s) (specify): Prefer all year but June, July, Aug, Sept and October would be helpful. _

Other (specify): _____

Please describe the reasons for the timing specified. Water Temperature is highly variable. Occasional snap shots are not particularly helpful because of the great natural variability. _____

_____

_____

At times, due to other priorities, the system may not acquire an image as expected. Please describe the impact if an image is missed or if the images cannot be acquired per the frequency or times requested. ____

The fewer the data points the less useful the data. One data point per week would be marginally useful and one data point per month would probably not be useful. _____

_____

If images can only be obtained at times other than specified, do you want them? Yes **No**

Specific Site Details – Resolution

To assist with tasking, we need to articulate the desired spatial resolution for each site. Best efforts will be made to meet the desired needs.

What is the range of sizes of items at the site that must be identified to monitor the ecosystem, changes & processes: Since we are interested in water temperature, 10 meter resolution would be adequate. _____(meters)

Comments or special needs regarding resolution:

_____

_____

_____

Site Description (use additional pages, as needed)

Provide additional information about the site to describe the specific ecosystem characteristics, possible threats and changes, and the environmental processes to be studied. This information should clarify and elaborate on information from the Initial Site Proposal (i.e., no need to repeat information).

Describe the site to be monitored (location, surroundings, etc.). The Columbia River in this area is the southern border of WA and the northern Border of Oregon. The river is in a gorge. Upstream of the dam the river is in a wide, deep slow moving impoundment. Downstream the river is narrower, shallower and faster moving.

Describe the ecosystem(s) present. Upstream of the dam the ecosystem is a reservoir with some lacustrine characteristics. It is slow moving and can develop temperature stratification with depth. Downstream the river is more riverine in nature, well mixed, shallower and faster moving.

Describe possible threats and changes to the site. John Day Dam is one of 15 dams on the Columbia/Snake River system in Washington State alone. The potential impacts of these dams on the river ecosystem are numerous, but the impact that this proposal is addressing is the effect that these dams may have had on water temperature.

Describe the environmental process(es) to be studied. The main process is heat exchange at the air/water interface. Dams have altered the geometry and flow characteristics of the river. The river flows through a hot dry climate but is the home of coldwater fish so it is important to understand the processes that provided for adequate cold water for those fish and how those processes have changed due to the dams, other human activity and climate change.

Describe how changes in the ecosystem will indicate environmental processes. Changes in the temperature regime of the river are manifestation of the process of heat exchange.

List some specific features to examine and parameters to measure at the site:

Water Temperature

Describe the purpose of collecting images for this site over a 25 year period – what makes this site an important environmental benchmark. The Pacific Northwest region is working to prevent the extinction of

wild pacific salmon in the Columbia River. One of the measures being discussed is mitigation of temperature impacts caused by the dams. The John Day pool is a downstream site where warm temperature is a problem. It is a site where the cumulative impacts of the 15 dams seems to be manifested. This fiducial project would allow us to monitor temperature trends over the next decades and determine if measures that may be implemented at the dams are effective. _____

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Additional comments. _____

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